CHAPTER 3

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Chapter summary

A fee-for-service (FFS) payment system, which pays for health care services for 80 percent of Medicare beneficiaries and most workers covered by employer-sponsored insurance, creates economic incentives for providers to increase the volume of medical services they furnish. By paying piecemeal for each service or set of services, a FFS payment system increases providers' revenues as long as they increase the number or intensity of the services they deliver. Many types of health care providers have responded to these incentives by forming financial and organizational relationships with one another that enable, encourage, or reward volume growth. The result is a health care industry designed to increase the volume and intensity of services for the vast majority of Medicare beneficiaries enrolled in the FFS program. This volume growth increases Medicare costs for beneficiaries and taxpayers, and there is no evidence of a correlation in the aggregate between greater volume of services per beneficiary and higher quality care or improved health outcomes.

In this chapter

This chapter focuses on the variety of collaborative relationships between hospitals and physicians—including joint ventures, hospital employment of physicians, and hospital recruiting of community physicians—that are becoming increasingly prominent in health care delivery systems across the country. Although collaborative arrangements between hospitals and physicians sometimes can be formed to achieve desirable program goals, such as improving the quality of inpatient care in response to pay-for-performance incentives or providing access to specialty services in hospital emergency departments serving underserved communities, this chapter focuses on how these relationships contribute to volume growth. By revealing how the drive to increase service volume becomes ingrained in the structures of the health care delivery system in response to current Medicare FFS payment policy, we underscore the need to reform the policies that contribute to this dynamic. ■

A fee-for-service (FFS) payment system, which pays for health care services for 80 percent of Medicare beneficiaries and most workers covered by employer-sponsored insurance, fuels economic incentives for providers to increase the volume of medical services they furnish.[1] By paying piecemeal for each service or set of services, a FFS payment system will increase providers' revenues as long as they increase the number of services delivered. In traditional economic markets, the volume of goods and services produced rises and falls primarily due to changes in consumer demand, but in a health care marketplace, the suppliers of services (i.e., providers) have a major influence on the amount and intensity of services they deliver to patients.

Many physicians and hospitals have responded to the incentives presented by FFS by implementing financial and organizational arrangements that enable, encourage, or reward volume growth. The result in most areas of the country is a health care delivery system designed to increase the volume and intensity of services for the vast majority of Medicare beneficiaries who are enrolled in the traditional FFS program. This volume growth increases Medicare costs for beneficiaries and taxpayers, but in the aggregate there appears to be no correlation between higher spending levels and higher quality of care or improved health outcomes; in fact, the opposite may be true (Baicker and Chandra 2004, CBO 2008, Fisher et al. 2003a, Fisher et al. 2003b, MedPAC 2003).

This chapter explores the collaborative financial and organizational arrangements that have arisen between hospitals and physicians over the past few years and examines how they may contribute to the observed growth in the volume of services provided to beneficiaries in FFS Medicare. The relationships between hospitals and physicians matter because they show how the drive to increase service volume under FFS payment becomes ingrained in the structure of the health care delivery system. Fundamental payment reforms are needed to drive the health care delivery system toward the Commission's goals of moderating volume growth, while increasing the quality and value of health care services delivered to Medicare beneficiaries and paid for by beneficiaries and taxpayers.

In reviewing relationships between hospitals and physicians, we and other researchers find growing competitive as well as collaborative dynamics at work (Berenson et al. 2006, Goldsmith 2006, MedPAC 2006). The two often are interrelated: The fear of competition has been a potent driver of collaboration in some health care markets across the country. For example, one of the most visible and controversial manifestations of competition between hospitals and physicians is the rapid growth in the number of physicians investing in stand-alone specialty hospitals, ambulatory surgical centers (ASCs), and diagnostic imaging facilities and diverting patients from community hospitals to these facilities. In the four years from 2002 to 2006, the number of physician-owned specialty hospitals grew 178 percent (from 46 to 128), and the number of Medicare-certified ASCs grew 31 percent (from 3,600 to 4,700). In response to this competitive pressure, hospitals in some communities have decided to collaborate with physicians by entering into joint ventures with certain types of specialists (e.g., cardiologists, orthopedic surgeons, and radiologists) to promote their own specialty service lines. The Commission and other researchers found that the increasing number of physician-owned specialty hospitals is fueling volume growth for certain types of procedures (MedPAC 2006, Mitchell 2007, Nallamothu et al. 2007).

Though not discussed further in this chapter, other work by the Commission has examined the implications of this recent growth in competitive relationships between hospitals and physicians, particularly the growth of physician-owned specialty hospitals, and how those competitive relationships contribute to volume growth (MedPAC 2006, MedPAC 2005b). The Commission will continue to analyze these issues in future work. We also have considered how the current complex system of laws that regulate relationships between hospitals and physicians may pose barriers to delivery system reforms (MedPAC 2007, MedPAC 2005b). We will continue to examine these issues as well.

Why hospital–physician collaborative relationships matter for payment policy

With their authority to make diagnosis and treatment decisions, physicians are the central actors in the health care delivery system. When they recommend services to patients, professional ethics and concern for their patients' best interests are powerful motivations. However, financial incentives also influence some physicians' decisions, particularly with regard to services that lack evidence-based guidelines (Wennberg et al. 2002).

By paying for each service performed, Medicare's traditional FFS payment system rewards providers for the volume of health care services they furnish rather than for the outcome of those services. For physician services, Medicare pays a separate fee for each of about 6,700 discrete services on its physician fee schedule. For most other types of services, payments are based on aggregated groups of discrete services (e.g., diagnosis related group payments for each inpatient hospital admission, resource utilization group payments for each skilled nursing facility admission, and home health resource group payments for each home health episode). With rare exceptions, Medicare payment policies do not limit the total number of services, admissions, or episodes of care that may be provided to an individual beneficiary.

Several analyses published over the past five years using data on care provided to Medicare FFS beneficiaries have found no systematic correlation between higher volume and higher quality of care, or between lower volume and lower quality of care. In 2003, the Commission analyzed the relationship between service use and quality and found that many states with low service use had relatively high quality and many states with high service use had low quality (MedPAC 2003). Elliott Fisher and colleagues found that states where Medicare spending is a third less than in higher cost areas had equal or better quality than more expensive areas (Fisher et al. 2003a, Fisher et al. 2003b). A separate study by Katherine Baicker and Amitabh Chandra concluded that "[s]tates that spend more per Medicare beneficiary are not states that provide higher quality care. In fact, additional spending is positively correlated with end-of-life care but negatively correlated with the use of effective care" (Baicker and Chandra 2004). A hospital-level analysis by Jack Wennberg and colleagues found that this phenomenon also appears to be true at the level of individual hospitals within a state (Wennberg et al. 2005). A recent analysis by the Congressional Budget Office compared adjusted Medicare spending levels by state with a composite quality of care indicator using Agency for Healthcare Research and Quality recommended care guidelines for three common medical conditions, and it concluded that "areas with higher Medicare spending tend to score substantially worse on [the] composite indicator" (CBO 2008). Lastly, two recent studies that looked at treatment patterns across areas for two specific conditions (heart attacks and colorectal cancer) found that patients who lived in high-cost regions were more likely to receive high-intensity treatments whether or not that may have been appropriate given the patient's other characteristics such as age, stage of disease, and presence of other illnesses (Chandra and Staiger 2007, Landrum et al. 2008). Taken together, these findings strongly suggest that if payment policy incentives focused on encouraging and rewarding providers for furnishing the appropriate mix of services, instead of more services, the overall cost of health care could be reduced without harming—and possibly improving—the overall quality of care patients receive.

Another reason for concern that incentives guiding the volume of care are misguided is grounded in providers' discomfort with the current arrangements. The growing entrepreneurial response of the medical establishment to financial incentives has prompted some providers to voice concerns about the effects of this trend on the medical profession. Arnold Relman, a long-standing leader in the medical community and former editor of the *New England Journal of Medicine*, recently observed that "almost all private, not-for-profit hospitals are now managed like businesses. They advertise and market their services and exert every effort to fill their beds with insured, paying patients." He found that doctors are succumbing to the same business incentives and noted that "health care has come to resemble a vast profit-oriented industry" (Relman 2007).

In a similar vein, a young physician recently stated in a *New York Times* essay that "overconsultation and overtesting have now become facts of the medical professions. The culture in practice is to grab patients and generate volume. 'Medicine has become like everything else,' a doctor told me recently. 'Everything moves because of money'" (Jauhar 2008). A 2005 report from an Arizona health policy organization found striking consensus among hospital and physician respondents that "the health industry was, in the words of one physician, in danger of 'losing its soul' and how there was more to this issue than just making more money and looking out after Number One…. Many [providers] wish to spend more time with patients and improving medical care" (Arizona Health Futures 2005).

Health services researchers have expressed concern about fragmentation in the delivery system, which stems from a medical culture that values autonomy and is reinforced by a FFS reimbursement system that pays providers individually, rather than collectively, for their work. This fragmentation has negative consequences for patient safety

by inhibiting the development of systems within hospitals and other health care delivery settings that emphasize and reward teamwork and shared accountability. Recognizing the interdependence of organizational culture in health care delivery and payment policy, the researchers note that eliminating barriers to patient safety in the current health care delivery system will be difficult without realigned financial incentives that increase the interdependence of health care provider organizations and increase the financial return on providing safe care (Shortell and Singer 2008).

In exploring the range of strategies hospitals and physicians are using to collaborate, it is important to acknowledge that some arrangements are more likely than others to influence volume and that the role of a given strategy may vary by community. For example, in communities experiencing rapid population growth or that are historically underserved, hospitals that are trying to attract more physicians may not be responding to FFS payment incentives to grow service volume as much as they are responding to community needs for improved access to care. Nevertheless, policymakers should be aware of the overall role of these strategies in producing more services and increasing costs for Medicare, its beneficiaries, and taxpayers.

What drives collaboration between hospitals and physicians?

Although the tenor of hospital and physician relationships since at least the 1990s has been increasingly tense or even hostile, hospitals and physicians still have compelling reasons for collaborating to exert more control over the volume of care and to share in the resulting increased revenues. The degree to which hospitals and physicians engage in collaboration or competition varies widely across local health care markets in the United States. The following section describes the different collaborative activities taking place.

Factors driving hospitals to collaborate with physicians

In this era that some researchers describe as one of "loose managed care," hospitals have at least four reasons to align with physicians. Alignment potentially improves a hospital's ability to compete for admissions, improve quality of care, control the cost of care, and gain leverage with health plans in rate negotiations (Casalino and Robinson 2003). The Commission's review of the literature and conference proceedings on recent industry trends, site visits, and discussions with industry representatives about alignment strategies indicates that all these factors are at play, but the drive for admissions and profits on outpatient services is particularly intense. Of particular interest is the competition among hospitals for relationships with physicians, who are essential to increasing admissions and outpatient referrals. As one hospital executive summarized this dynamic: "No physicians, no admissions, no hospital" (Casalino and Robinson 2003).

In securing their referral base through closer alignments with physicians, hospitals may be acting defensively—responding to the actions of others that threaten to undermine their sustainability. One motivation for hospitals to align with physicians is the concern that physicians will open a specialty hospital or ASC and redirect lucrative, if not all, referrals to the facility in which they have an ownership interest. Another concern is that a community's physicians will enter into a joint venture with other organizations to provide services such as imaging and cardiac catheterization, which has the effect of redirecting these high-margin services away from the hospital. Physicians' new-found leverage in the market stems from technological advances that make it possible to do more diagnostic and therapeutic services outside of the hospital and from Medicare payment policies that have created profitable service lines.

A hospital may also be concerned that if it does not align with physicians—that is, give them an opportunity for greater control and profit—another hospital in the community will.[2] Another possibility is that certain types of physicians will practice exclusively outside the hospital, refusing to take call at the hospital. Under either of these scenarios, a hospital could lose admissions and referrals to its own outpatient department and have a diminished capacity to meet patient needs or comply with regulatory requirements. The Center for Studying Health System Change recently found that hospitals in some large communities, including Miami and Phoenix, are experiencing emergency department (ED) coverage problems for many, particularly surgical, specialties. Because general acute care hospitals are obligated under the federal Emergency Medical Treatment and Active Labor Act to provide access to emergency care around the clock, the researchers found "[i]n the communities experiencing significant ED coverage problems, most

hospitals reluctantly have started paying physicians for ED call or have guaranteed payment for services rendered for those patients lacking health insurance, or both" (Berenson et al. 2006).

With or without the competitive threat from physician-owned specialty care facilities, a hospital may decide to partner with certain types of specialists as a business strategy to grow profitable specialty service lines such as cardiac care, orthopedic surgery, and advanced diagnostic imaging. Physicians can provide insight into what clinical services might experience future growth, bring in more admissions and referrals, help to reduce the hospital's costs per admission, and help to improve the hospital's quality of care in response to pay-for-performance programs.

Over time, these individual collaborative decisions may affect the composition of the physician workforce and supply of hospital resources in an area. Research by Baicker and Chandra suggests that the composition of the physician workforce in an area affects whether greater service volume, higher quality of care, or both will occur. Specifically, they found that states where more physicians are general practitioners tend to have higher quality care and lower per capita spending, and those where a larger share of the physician workforce is composed of specialists have higher per capita costs and lower quality (Baicker and Chandra 2004).

Over the last several years, Jack Wennberg, Elliott Fisher, and their colleagues have produced considerable evidence that concentrations of medical and surgical specialists combined with an abundant supply of hospital beds in a given geographic area are strongly associated with higher per capita health care costs (adjusted for patients' health status) and lower quality care for chronically ill Medicare beneficiaries (Fisher et al. 2003a, Fisher et al. 2003b, Wennberg and Cooper 1999, Wennberg et al. 2005, Wennberg et al. 2004). Similarly, other research found that supply of local hospital beds, rather than patient preferences, explained the differences in end-of-life care among patients (Pritchard et al. 1998).

Hospitals and physicians also have initiated collaborations in response to financial incentives or clinical imperatives to improve hospitals' quality of care. Medicare's use of pay-for-performance incentives in the Hospital Quality Improvement Demonstration has prompted hospitals to engage with physicians to improve the hospitals' performance results (Butcher 2007, Pham et al. 2006). Hospitals find that employing physicians in leadership positions to interact with community physicians improves physician compliance with hospital initiatives and priorities, such as implementing clinical guidelines. In addition, individual physicians have initiated effective quality improvement strategies for inpatient care and then worked with hospitals and payers to convince them of the economic and clinical rationales for investing in these innovations (Gawande 2007).

Factors driving physicians to collaborate with hospitals

Physicians are motivated to partner with hospitals for various reasons. First, partnering with hospitals has the potential to increase physicians' productivity, making it possible for them to do more in the same amount of time. For example, by working with the hospital to better manage the operating room schedule to reduce travel and preparation time, surgeons can do more surgeries faster. Second, some physicians are interested in pursuing opportunities for sources of income beyond their professional fees, and hospitals are in a position to offer them joint ventures on ancillary services, bonus payments for meeting certain quality objectives, hourly payment for attending medical staff meetings, joint ventures pertaining to real estate, and attractive bond offerings. Third, partnering with a hospital may give physicians better leverage in gaining entry to private insurers' provider networks and negotiating better payment rates with those insurers. In fact, such negotiations may compel physicians and hospitals to pursue clinical integration, the most interconnected form of hospital–physician collaboration.

Lifestyle preferences also may lead physicians who want greater scheduling flexibility and fewer administrative responsibilities into partnering with a hospital. Hospital employment offers a more predictable work schedule and a greater likelihood of part-time work. In addition, some physicians are increasingly eager to avoid the responsibilities of managing staff, billing insurers, and covering the costs of professional liability (malpractice) insurance.

Hospital and physician alignment strategies

The various alignment strategies hospitals and physicians use underscore the symbiotic relationship that exists between the two provider types. This section describes seven different alignment strategies in which hospitals:

- offer community physicians financial incentives to foster clinical integration,
- hire physicians as employees,
- employ hospitalists,
- recruit physicians to community practices within the hospital's market area,
- employ physician liaisons,
- enter into joint business ventures with physicians, and
- offer physicians participatory bond investment opportunities.

Fundamental to most of these business arrangements are the financial incentives embedded in FFS payment systems to increase the volume of health care services delivered. We could not measure the prevalence of each strategy with quantitative precision; instead, our analysis relied on provider site visits and publicly available industry statistics and reports. The implementation details of these strategies vary from market to market and they often are affected by the complex framework of laws, described in the text box (pp. 62–63), that regulate hospital–physician relationships.

Financial incentives to foster clinical integration between hospitals and community physicians

Some alignment strategies are designed to address the business challenge to hospitals posed by community physicians, who generally practice independently of the hospital and therefore have financial interests separate from the hospital. In recent years, hospitals have sought to bridge the two parties' separate financial incentives by integrating clinical practices. We examined the four most prominent clinical integration strategies in the health care marketplace today: comanagement arrangements, financial incentives associated with physicians' use of supplies and technology, information technology (IT) collaboration, and hospital payments to community physicians for their time spent providing services in the hospital.

Comanagement arrangements

Under comanagement arrangements, a hospital and physicians in the local community form a limited liability corporation (LLC), under which the LLC, funded by the hospital, pays the physician a salary for performing specific clinical tasks (e.g., quality improvement or medical technology evaluation), usually related to a specific service line (e.g., cardiology or orthopedics). The hospital also pays the physician a bonus for meeting certain objectives. According to consultants familiar with these arrangements, these objectives may be associated with improved patient safety; patient satisfaction results; and efficiency, standardization, and cost savings (Nathanson and Schmidt 2006). With bonuses tied to the achievement of quality and efficiency objectives, an opportunity exists under these arrangements to improve the value of health care dollars spent. Some comanagement arrangements are financed using a fixed amount of revenue. To ensure regulatory compliance, these arrangements tend to include the contracting of an outside valuation company to assess whether physicians are compensated at fair market value.

At the same time, an opportunity exists under comanagement arrangements to maximize revenues by increasing volume. For example, if physicians respond to a bonus by achieving shorter patient turnover time in the operating room, the hospital can increase the volume of patients it serves without necessarily increasing capital or staffing costs. Moreover, to the extent that a hospital's bonus system is tied directly to volume objectives, growth can be expected. At least one industry consultant indicated that increasing market share and meeting geographic growth targets are an acceptable basis for bonus awards (Eisenberg 2006). In this way, comanagement arrangements may encourage hospitals to attract and compensate high-volume physicians, cultivating a culture of performing more services without evidence that it will improve quality or health outcomes.

Financial incentives associated with use of supplies and technology

Under certain arrangements, a hospital will share with physicians any savings they achieve by increasing the efficient use of medical supplies and devices used in certain types of clinical procedures. An agreement between cardiologists and PinnacleHealth System regarding items used in a cardiac procedure is an illustrative case (Abelson 2005). The doctors and hospital agreed that, when possible, physicians would use a single artery-opening balloon in all stent-insertion procedures instead of using multiple balloons in each procedure. In so doing, the doctors would share in the savings. They would also share in the savings from using stents, pacemakers, and other cardiac devices that the hospital pays for at a negotiated volume discount. Regulators approved the arrangement because it offered adequate protections for the quality of care.

Laws that regulate hospital–physician relationships and their implications

Certain statutes governing relationships between hospitals and physicians are intended to protect consumers and payers from possible abuses. For example, hospitals might be inclined to reward physicians for referrals, which could result in the provision of unneeded care, higher Medicare spending, and unfair competition. Also, under Medicare's diagnosis related group payment system that pays hospitals a fixed rate per admission even if their costs exceed this rate, hospitals might be inclined to reward physicians for inappropriately limiting patient care to keep costs down. Accordingly, as hospitals and physicians forge relationships, they must navigate the statutes listed in Table 3-1.

The hospital industry has raised concerns that this legal structure is complex and lacks clarity, thereby stifling productive alignment between hospitals and physicians (AHA 2007a). Substantial gray areas exist in defining what is allowed and what is not. Providers may disagree on what incentives stretch the limits of the law or have different levels of tolerance for the risk of being in violation of applicable statutes. For example, can hospitals reward community physicians for increasing market share in a given geographic area, or would that practice violate the Stark law or the anti-kickback statute? Contrasting opinions exist within the industry on the legality of such strategies.

With respect to the alignment strategy traditionally called gainsharing (also referred to as shared accountability arrangements), the Commission recommended in 2005 that current law be reformed to permit arrangements that have the potential to encourage cooperation among providers in improving efficiency, reducing program costs, and enhancing quality (MedPAC 2005b). In a typical shared accountability arrangement, hospitals and physicians agree to share savings from reengineering clinical care in the hospital. Ideally, the legal framework within which these arrangements would operate could allow joint negotiating with manufacturers to obtain greater discounts on supplies and devices, more efficient scheduling of operating rooms, mutual compliance with

(continued next page)

TABLE 3–1 **Laws applicable to hospital–physician relationships**

Law	Description
Civil money penalty statute (Section 1128A of the Social Security Act)	Prohibits hospital payments to physicians to reduce or limit services to Medicare inpatients, regardless of the medical necessity of the services. A hospital would be in violation of this statute if, for example, it rewarded physicians for reducing the number of days in the intensive care unit or the drugs their patients use.
Federal anti-kickback statute (42 U.S.C. 1320a–7b)	Prohibits the offer, payment, or receipt of anything of value to induce the referral of patients for services paid for by federal health programs.
Ethics in Patient Referrals Act (the Stark law) (42 U.S.C. 1395nn)	Prohibits physicians from referring Medicare or Medicaid patients for certain services (e.g., imaging, hospital services, and physical therapy) to entities with which they have a financial relationship, unless the arrangement fits within an exception. Exceptions include certain compensation arrangements and surgical services provided by ambulatory surgical centers.
Antitrust laws (various federal and state statutes)	May apply to hospitals and physicians that are independent entities but that wish to jointly negotiate contracts with health insurance payers. Antitrust laws are enforced by the Federal Trade Commission, Department of Justice, state attorneys general, and—potentially—private litigants.

Laws that regulate hospital–physician relationships and their implications (cont.)

clinical protocols for improving efficiency and quality, and sharing bonuses earned for quality achievements.

Under current law, however, shared accountability arrangements are limited to a more narrow set of permissible activities. Efforts to promote these arrangements were largely stymied after the Office of Inspector General (OIG) issued a special advisory bulletin in 1999 stating that shared accountability arrangements (referred to by the OIG as gainsharing arrangements) are prohibited by the civil money penalty statute that prohibits hospitals from paying physicians to limit services to Medicare inpatients (OIG 1999). The OIG stated that, in addition to creating incentives for physicians to withhold or diminish care, these arrangements could induce physicians to refer patients to the hospital with which they have the most lucrative arrangement, a potential violation of the anti-kickback statute. OIG noted in its ruling that well-designed arrangements could result in better quality care at lower cost—for example, by encouraging physicians to substitute lower cost (but equally effective) supplies and devices and eliminate unnecessary ancillary services and inpatient days.[3]

In advisory opinions issued between January 2001 and January 2008, the OIG approved several narrowly defined shared accountability arrangements when they included several features that protected the quality of care and made it unlikely that physicians would be financially rewarded for referring patients to the hospital. However, these opinions apply only to the individual arrangements submitted for review by specific providers. Other providers wishing to receive OIG approval must design similarly narrow arrangements and then go through the lengthy advisory opinion process, which probably is a strong deterrent to forming the arrangements.

The Commission has encouraged the development of shared accountability arrangements in which hospitals and physicians collaborate to reduce costs and improve quality. These arrangements could counterbalance certain conflicting incentives inherent in separate payment systems for physicians and hospitals under fee-for-service Medicare. In its 2005 report to the Congress on physician-owned specialty hospitals, the Commission recommended that the Congress provide the Secretary of the Department of Health and Human Services (HHS) the authority to allow and regulate these arrangements (MedPAC 2005b). The recommendation called for the Secretary to develop rules that allow gainsharing arrangements as long as safeguards exist to ensure that cost-saving measures do not reduce quality and that payments to physicians are unlikely to influence their referrals.

Within HHS, CMS will be testing different types of shared accountability arrangements through two demonstration programs. In the Medicare Hospital Gainsharing Demonstration Program, authorized by the Deficit Reduction Act of 2005, CMS will allow hospitals to provide gainsharing payments to physicians that represent a share of the savings achieved by collaborative efforts to improve quality and reduce costs. The three-year project, involving as many as six hospitals, will evaluate short-term improvements in quality and efficiency that occur during, and up to 30 days after, the inpatient stay. By contrast, the broader Physician Hospital Collaboration Demonstration (authorized by Section 646 of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003) will examine the impact of shared accountability arrangements on longer term health outcomes (e.g., mortality and readmission rates) and use of services. This three-year project will focus on integrated delivery systems and physician groups. For both demonstration projects, CMS has issued solicitations but has not yet announced participants. ■

Although some hospitals have found the regulatory burden too great to pursue such arrangements, others have found ways around the restrictions. One hospital that we visited developed an approach it calls "virtual gainsharing": When physicians agreed to help the hospital negotiate lower rates with vendors for surgical implants and devices, the hospital invested a portion of the savings in infrastructure requested by physicians, such as new cardiac catheterization labs, operating rooms, and surgical equipment. Another hospital we visited has reached a similar agreement with physicians.

Virtual gainsharing arrangements may be attractive to hospitals because they can reduce supply costs and free up money to invest in profitable service lines, but the economic benefits to payers and patients are less clear. The Commission has recommended changes in the legal and regulatory structure for gainsharing arrangements that would allow the program and beneficiaries to share in any reduced costs produced by these efficiency gains. Perversely, the current legal framework may encourage hospitals and physicians to collaborate on reinvesting any savings from efficiency gains into new ventures, such as specialty service lines or medical equipment, that actually drive more volume and increase spending overall. In effect, operational and capital improvements that result in greater productivity also generate more procedures and higher spending, without evidence that more services are correlated with overall gains in quality or health outcomes.

Information technology

Hospitals can also facilitate alignment with community physicians by donating IT (including hardware, software, Internet connectivity, and training and support services) to physicians. The Congress enacted an exception to the regulations implementing the Stark law in October 2006 clarifying permission for this type of arrangement (AHA Center for Healthcare Governance 2007). In May 2007, the Internal Revenue Service (IRS) released a memo stating that IT-related financial assistance to physicians will not pose a threat to the tax-exempt status of a hospital donor (IRS 2007). There are several conditions in the IRS guidance: The technology must be used predominantly to create, maintain, transmit, or receive electronic health records (EHRs); have an e-prescribing capability; and be interoperable. Recipients of donated technology must also contribute at least 15 percent of the cost.

Many hospitals, particularly in competitive markets, are providing or planning to provide this technology to physicians. According to a recent survey of health care IT executives, an estimated 35 percent to 40 percent of hospitals are actively considering assisting physicians with EHRs or have already organized physician EHR programs (AHA Center for Healthcare Governance 2007).

A 2007 American Hospital Association analysis noted that hospitals and physicians have a variety of reasons to pursue alignment through IT (AHA Center for Healthcare Governance 2007). For both parties, there is the promise of improved quality and patient service. The availability of EHRs across care delivery sites eases and standardizes the process of populating a patient's health record with lab and imaging results and discharge notes. Clinical and administrative protocols and reminders can be built into the system. Administrative staff can query the patient database for overdue reminders, creating additional opportunities for patient education and engagement.

The benefits of EHRs in increasing physicians' efficiency in their own practices are considerable. They can increase practice revenue due to faster and better documented coding and claims submission processes. Physicians can more easily report on performance measures for quality-reporting incentive programs; more efficiently conduct patient outreach, which may increase service volume; and eventually deploy their office staff more efficiently (e.g., nursing staff can spend less time pulling patient charts and tracking down test results, effectively freeing them to see more patients).

The hospital also stands to gain from helping physicians finance their EHR systems and linking physicians' systems to the hospital. In addition to the potential quality gains, the hospital has a powerful tool to "bond physicians to the hospital." For example, an EHR strategy can be "an effective market defensive vehicle if the hospital is at risk of having referring physicians lured away by a competing hospital." In some highly competitive markets, there can be a "first-to-market" phenomenon, in which the hospital with the most attractive and cohesive community physician EHR initiative is more likely to lock in key physicians (AHA Center for Healthcare Governance 2007).

The Commission has noted that the adoption of clinical IT by providers has the potential to improve the quality, safety, and efficiency of health care, and we have recommended that Medicare quality incentive programs for physicians include measures of IT-supported functions (MedPAC 2005a). At the same time, the trend in the hospital industry to attract physicians to hospital market areas using IT improvements as an incentive may present a more complex picture of IT's potential benefits. To the extent hospital IT strategies help develop clinical integration with community physicians, volume is likely to increase in competitive hospital market areas.

Compensating community physicians for their time

Hospitals are increasingly paying community physicians to provide clinically related services at the hospital. Historically, physicians who belonged to a hospital's

medical staff spent some of their time covering the emergency room pro bono, tending to uninsured patients, and serving on hospital committees in exchange for enhancing a physician's reputation through association with the hospital. This reciprocal arrangement is no longer the default. As a physician group practice executive described: "Traditionally, physicians had a lot of loyalty to the hospital. They would actively go there to eat breakfast, for the camaraderie, etc. There is little loyalty now. Doctors don't take part in hospital governance unless they are forced to" (Berenson et al. 2006). Today, hospitals pay physicians to serve as medical directors for a service line, on either a part-time or a full-time basis. Time spent at hospital committee meetings may be compensated. Hospitals may also pay physicians Medicare rates or higher to care for uninsured patients.

Hospitals are also increasingly paying physicians for ED coverage (Johnson 2006, O'Malley et al. 2007). Most hospitals—73 percent in 2005, according to a 2006 survey of ED directors—find maintaining adequate call coverage a problem (ACEP 2006). In 2005, 36 percent of hospitals reported paying physicians for emergency room coverage, up from only 8 percent in 2004. Typically, hospitals pay $1,000 per day for ED coverage in scarce subspecialties such as neurosurgery, although one hospital reported it pays neurosurgeons $10,000 per week of ED coverage and 120 percent of Medicare payment rates for uninsured trauma patients (Berenson et al. 2006). Other hospitals have agreed to pay physicians' liability insurance in exchange for covering the emergency room (Berenson et al. 2006, O'Malley et al. 2007). Specialists in markets with physician shortages are most likely to be able to negotiate such arrangements. Hospitals, fearing the prospect of defections by specialist physicians to competitors or to meet their legal obligations under the federal Emergency Medical Treatment and Active Labor Act to provide access to emergency care around the clock, often believe they have no choice but to meet the physicians' demands. Hospitals' decisions to pay physicians for ED coverage may result in some increases in service volume, but in most cases this outcome is desirable from the perspective of ensuring rapid access to emergency care.

Hiring physicians as employees

Hospitals are increasingly hiring physicians as employees. According to a 2007 report from a large national physician recruitment firm, 43 percent of their physician search assignments in 2006–2007 were for placements in a hospital setting, compared with only 11 percent in 2003–2004 (Merritt, Hawkins & Associates 2007a).

A number of factors motivate hospitals to take this approach. Hiring physicians as employees can bypass regulatory concerns that complicate financial arrangements between hospitals and community physicians. For example, hospitals can offer payment incentives to employed physicians that otherwise might violate anti-kickback laws, without being subject to the same scrutiny that pertains to community physicians. From the physician's perspective, being employed by a hospital may provide benefits associated with career stability and lifestyle, such as more regular hours, administrative support systems, and the status of being associated with a well-regarded health system or hospital. From the hospital's perspective, by employing physicians it can avoid having to rely on the cooperation of community physicians in recruitment efforts (ECG 2005). Employing physicians can also improve the hospital's ability to persuade them to practice more cost-efficient medicine and reduce lengths of stay (LOSs) (ECG 2005). Employed physicians in charge of a department may also be more effective than a nonclinical administrator in communicating with community physicians.

Hiring may be complicated by perceptions held by community physicians, who may resent an arrangement that suggests favoritism by the hospital toward a particular group of community physicians or perceive hospital employment as a competitive threat to their livelihoods. In response, hospitals in some communities have chosen to employ all of the community's physicians. Other barriers to hospital employment of community physicians in California, Texas, Ohio, Colorado, Iowa, Illinois, New York, and New Jersey are laws banning the "corporate practice of medicine," which preclude hospitals from employing physicians to provide outpatient services.

The effect of employment on the volume of care delivered appears to vary. For example, one Midwestern health system provides an interesting example of an integrated delivery system (IDS) that rewards and encourages greater volume. The chief executive officer notes that the system's structure makes money and has withstood the test of time (18 years) as well as several IRS reviews. He notes that the health system's culture is oriented "to servicing physician practices." The text box (p. 66) provides further discussion.

Case study: A Midwestern integrated delivery system's experience employing physicians

A Midwestern integrated delivery system (IDS) with multiple hospitals, clinics, and post-acute care service facilities employs physicians under what it calls a "partnership model." The IDS pays its physician partners based on their individual production. Physicians receive a percentage of the revenue they generate (excluding technical fees) and the revenue generated by physician assistants and other nonphysician practitioners whom the physician supervises. At the beginning of the year, the physicians do not know what their income will be. They agree to receive a biweekly paycheck for a specified amount, which is reconciled quarterly based on a percentage of revenue from each payer generated by their services. For example, a physician may earn 54 percent of Medicare's payment amount for a given service, 54 percent of each private insurer's payment amount, and 54 percent of Medicaid's payment amount; the percentage may vary according to each physician's total revenue. The IDS retains the remainder of each payment as overhead and profit. The system also pays physicians a predetermined rate for any uncompensated care they provide. In effect, this payment system enables physicians to increase their total income by providing more services and thereby increasing the health system's revenue.

The base payment structure is supplemented by a performance incentive program under which physician partners can earn additional money for retirement if they meet certain goals, such as patient satisfaction, cost reduction, and quality improvement. According to the chief executive officer (CEO) and medical director, offering performance incentives motivates physicians, particularly given their competitive nature. An incentive system became necessary when the IDS's management officials realized that a production-oriented compensation system did not provide sufficient incentive for physicians to participate in hospital management, quality improvement, and cost containment initiatives.

Physician partners at the IDS have agreed to adjust the percentage of physicians' revenue so that primary care physicians receive a higher percentage than specialty physicians, in recognition of the fact that specialty services are paid higher rates and yet the specialists depend on the primary care physicians to refer patients to them. According to the IDS's CEO, the culture is not the same in a nearby state, where specialists do not think they need to sacrifice part of their income to primary care physicians.

The IDS manages the resources available to physicians in terms of technology (e.g., diagnostic imaging equipment), staffing, and information technology. As the IDS takes on these responsibilities, the physician has more time to see patients, generate volume, and increase income.

The IDS makes imaging and other equipment available to physicians as long as analysis shows that it will provide a return within three years. The IDS generates revenue for itself from facility fees for the use of hospital-owned technical equipment, such as MRI machines, and the physician partners benefit financially from the availability of the equipment to the extent it garners them additional volume. The CEO referred to this as a "win-win situation" for the IDS and its physician partners.

The IDS owns a range of other health care service providers, allowing the system to capture some of the profit associated with "downstream" services, such as home health care, physical therapy, durable medical equipment, and pharmacy, which the system's primary care practitioners prescribe for patients. The CEO estimates that for each dollar billed in the primary care physicians' offices the system generates an additional $9 in other health care revenues. ■

Some hospital systems use compensation models that differ from that used by the Midwestern IDS described in the text box. Some pay physicians an annual salary. Under a salary-based payment system, physicians tend to generate less volume than self-employed physicians and pay less attention to the costs of operating the practice (Casalino and Robinson 2003). One health system that we visited had traditionally paid its physicians an annual

salary and reportedly enjoyed the enhanced collegiality that being paid primarily on salary affords. For example, their colleagues tend to provide informal advice and consultations by telephone rather than requiring that they see the patient and bill for services. This system has recently blended physician salaries with a volume-based incentive payment structure. Because of the newness of this action, it was too soon to assess physicians' reactions. These physicians also have the opportunity to share in system profits on an annual basis.

Hospitals employing hospitalists

Hospitals are increasingly relying on hospitalists, generalist physicians who practice exclusively in the acute inpatient setting, to serve patients traditionally served by primary care and specialist physicians. In the last five years, the number of hospitalists in the United States has doubled. In 2003, the American Hospital Association reported 11,000 hospitalists working in its members' hospitals. Current estimates from the Society of Hospital Medicine suggest that there may be 24,000 hospitalists practicing in 2008, and some industry observers have projected that figure to grow to as much as 30,000 by 2010 (SHM 2007). Accordingly, hospitalists are serving a growing proportion of Medicare patients. In 2004, they were the attending physicians for 2.4 million Medicare beneficiaries or 20 percent of all Medicare discharges; by 2010, they are projected to be the attending physicians for 5.6 million beneficiaries or 43 percent of all Medicare discharges (SHM 2007). The text box (p. 68) describes how hospitals are employing hospitalists today.

The proliferation of hospitalists and hospitalist programs is widely considered a response by hospitals to the desires of primary care and specialist physicians who wish to spend more time seeing patients in their offices. Specifically, as technology has increased the number and complexity of services that can be performed in the outpatient setting, many primary care and specialty physicians have discovered that seeing their patients in the hospital may limit the amount of time they spend providing services in their offices. In addition, some researchers have posited that primary care physicians (PCPs) who spend less time in the hospital than others are less likely to have to treat uninsured patients (who may not be able to pay for treatment) and are less likely to encounter malpractice suits arising from hospital-based care (Pham et al. 2005). Thus, some hospitals may be employing more hospitalists as part of a strategy to improve their relationships with community physicians, who can generate patient referrals to the hospital. For their part, community physicians may welcome the addition of hospitalists to the local hospitals where they have admitting privileges, as that may increase both the amount of time community physicians have to see patients and the number of services they can perform.

Hospitals find that, aside from filling potential gaps in care created by the migration of PCPs out of the hospital, hospitalists offer other advantages, such as consolidating inpatient care into the hands of a few physicians, which may positively affect a hospital's cost management and quality improvement goals. Research to date on the cost and quality impacts of hospitalist programs indicates that they increase the efficiency of inpatient care, as measured by shorter average LOS and lower costs per stay, without decreasing the quality of care, as measured by mortality and readmission rates. The most recent analysis concluded that, compared with inpatients who were cared for by general internists, patients cared for by hospitalists had a modestly shorter average LOS (0.4 day shorter) and lower cost per stay ($268 less), with similar mortality and 14-day readmission rates (Lindenauer et al. 2007). The analysis also found that these trends generally persisted when patients of hospitalists were compared with patients of family physicians.

Other studies in the last 10 years have identified similar outcomes when comparing inpatients cared for by hospitalists with those cared for by other types of physicians. A 2007 study conducted in an academic teaching hospital over two years found that patients served by hospitalists were in the hospital approximately 0.9 day less than patients served by nonhospitalists (Southern et al. 2007). A 2005 study that isolated the impact of hospitalists on elderly patients admitted to the hospital for surgical repair of a hip fracture found that hospitalists' patients had a shorter time to surgery by six hours and a shorter LOS by three days compared with patients served by nonhospitalist physicians (Phy et al. 2005). Finally, a 2004 study conducted at an academic teaching hospital over one year found that patients served by hospitalists had a 1-day shorter LOS and significantly lower average costs per stay ($917) but higher average costs per day ($122) (Kaboli et al. 2004).

Evidence on the impact of hospitalist programs on overall Medicare spending is unclear. Under Medicare's inpatient prospective payment system, hospitalists' more efficient use of hospital resources during inpatient stays would

How are hospitals employing hospitalists today?

Hospitals employ hospitalists either directly or contractually. Most hospitalists are employed directly by hospitals or by hospitalist-specific physician group practices that contract with hospitals. In 2005, 34 percent of hospitalists were employed directly by a hospital, and 31 percent were employed by hospitalist-specific private practices, which includes hospitalist management companies (SHM 2007). An additional 20 percent were employed by a medical school or academic program and 16 percent were employed by a physician practice specializing in something other than hospital medicine. According to one industry expert, a growing proportion of hospitalists have been hired as contracted employees in recent years.

Some hospitals employ hospitalists as a part of a program that focuses on managing the clinical care of individual patients as they pass through the hospital's various clinical departments. These programs typically incorporate a variety of nonclinical efforts to assist facility administrators with improving hospital efficiency and commonly include nursing staff to assist hospitalists with patient care coordination. Some hospitals initiate and operate these programs internally. Others choose to outsource the implementation of these programs to hospitalist physician groups or companies that provide administrative services, such as hiring nursing support staff, establishing a hospitalist payment structure, and filing patient claims, along with contracting for a hospitalist group practice for the physician services. We spoke with a representative from one hospitalist company who noted that the cost of outsourcing the implementation of a hospitalist program can be prohibitive for smaller hospitals.

Hospitalists and hospitalist programs are more likely to exist at large, teaching, and urban hospitals and are less likely to exist at rural hospitals. Nationwide, 67 percent of hospitals with 200 or more beds, 63 percent of teaching programs, 57 percent of urban hospitals, and 17 percent of rural hospitals used hospitalists in 2006 (AHA 2007b). In addition, hospitalists are more common in certain geographic regions, such as on the East and West Coasts. For example, the presence of hospitalists is more pronounced in California than nationally. In California, 73 percent of large urban hospitals have hospitalist programs, compared with 32 percent of rural hospitals. ■

reduce hospital costs and increase the hospital's profit, but Medicare would not directly share in these savings in most cases. Many hospitalists have compensation arrangements that combine a base salary with volume-related bonuses, which may create incentives for them to increase the number of patients they see or services they provide. According to a 2005–2006 industry survey, 67 percent of hospitalists are compensated through a mix of salary and volume- and performance-based incentives, 5 percent are compensated based totally on a volume and performance basis, and 28 percent are salaried (SHM 2008). Hospitalists with volume-based compensation arrangements may indirectly benefit from increases in admissions ordered by hospital-affiliated community physicians and hospital ED physicians, but hospitalists cannot directly affect a hospital's admissions rate because they do not decide whether to admit patients. Hospitalist industry leaders suggest that programs rewarding hospitalists on the basis of volume may fail to produce efficiencies for the hospital and ultimately will be abandoned. They argue that programs that balance volume incentives with quality and patient satisfaction incentives tend to limit the daily number of patients a hospitalist sees and, in so doing, are more effective at improving quality and reducing LOS.

Some community physicians have speculated that the increased use of hospitalists could increase hospital readmissions because of communication breakdowns between shifting members of hospitalist staffs and a patient's PCP when a patient is discharged. These

observers contend that the resulting discontinuity of patient care across settings could result in lower quality care for patients and that information critical to patient care may be lost in the transition (Brewer 2008). However, the most recent published analysis found that 14-day readmission rates for patients cared for by hospitalists were similar to those for patients cared for by general internists or family physicians (Lindenauer et al. 2007). Hospitalist industry leaders believe that well-designed hospitalist programs have the potential to reduce readmissions by facilitating communication between the hospitalist and community physician when a patient is discharged from the hospital (SHM 2007). Cogent Healthcare, one of the country's largest hospitalist companies, and other firms require their hospitalists to write patient transfer notes for the patient's PCP and tie hospitalists' bonus payments to the performance of this task. Cogent's program also has access to clinical care coordinator nurses for patients entering and exiting the hospital, including telephone contact with every patient within 48 hours of discharge from the hospital to review discharge instructions and compliance with the care plan.

Hospitalists also may play an important role in hospitals' efforts to implement information technology and other process tools to improve patient safety and other inpatient quality-of-care measures. Unlike community physicians who admit patients to multiple hospitals, hospitalists can be "captive audiences for adoption of new information technology such as computerized physician order entry, because hospitalists practice in a single institution and their higher patient volume can help them learn new technology more quickly" (Pham et al. 2005). Thus, another reason hospitals are increasing the use of hospitalists may be an expectation that this investment will improve their performance in Medicare's and private payers' quality improvement incentive programs.

Hospital recruitment of physicians

Hospitals have a strong interest in ensuring that physicians practicing in the community refer patients to them. A lack of affiliated physicians can reduce the number of patients who go to a hospital. For example, if it takes PCPs months to schedule a gastroenterology consultation at a given hospital, they may start sending patients to specialists aligned with another hospital. Similarly, a hospital system's lack of PCPs may lead specialists to affiliate with a better organized system to generate referrals. In one example recounted in the *San Francisco Business Times*, a cardiology group changed its referral pattern from one hospital to another because it had lost faith in the former facility's ability to attract PCPs that could refer heart patients to the group. As an executive in the cardiology group put it, "I mean no disrespect to [the former hospital system], but they don't have a physician strategy" (ECG 2005).

Overall physician recruitment has increased over the past few years but the mix of physician specialties being recruited has shifted over time. In the mid-1990s, approximately 75 percent of the physician searches performed by a large national physician search firm were for primary care physicians, driven largely by the growth of managed care plans at that time. In the early- to mid-2000s, that proportion was reversed and about 75 percent of the firm's searchers were for surgical or diagnostic specialists. Most recently (in 2006–2007), family practice and internal medicine were the firm's two most requested physician search assignments (Merritt, Hawkins & Associates 2007a).

Even if the hospital is not at risk of alienating physicians by not having a "physician strategy," hospital executives may perceive that they are forgoing a potential revenue stream by not recruiting physicians with potentially high-volume and high-margin practices to their market area. For example, in a 2007 industry survey of hospital chief financial officers, the 119 survey respondents estimated that the average hospital inpatient and outpatient revenue generated per physician is about $2.7 million for each invasive cardiologist, $2.3 million for each orthopedic surgeon, $2.2 million for each noninvasive cardiologist, $2.1 million for each neurosurgeon, and just under $2.0 million for each internist and each general surgeon (Merritt, Hawkins & Associates 2007b). While somewhat lower in 2006–2007 compared with a few years ago due to recently increasing demand for primary care physicians, recruiting demand for specialist physicians remains strong, especially for radiologists, cardiologists, general surgeons, and orthopedic surgeons (Merritt, Hawkins & Associates 2007a).

Hospitals do not always have the support of existing community physicians for recruiting new ones. Physicians newly joining an existing practice are often money losers for the practice until they gain business. In addition, existing community physicians may think they compete for patients with new physicians—whether employed by a private practice or by the hospital. Accordingly, a

hospital must invest not only in attracting new physicians to the community but also in smoothing relationships with existing community physicians. Hospitals are unlikely to take on the costs and organizational challenges of hiring physicians unless the economic incentives presented by the payer environment make it increasingly worthwhile to do so.

Physician liaisons

Hospitals must develop a well-rounded integration strategy to ensure that community physicians use hospital services. To this end, hospitals pay particular attention to physicians' use of high-margin outpatient services by investing in "liaisons" or "sales teams," who visit community physicians with the primary goal of maintaining or increasing their use of hospital services.

Hospital industry experts report a spectrum of activities and roles these liaisons perform. The most limited role is a "check-in" model, which allows the hospital to apprise physicians of new or enhanced hospital capabilities and "present a friendly face." In a more ambitious model, liaisons have responsibility for helping physicians resolve technical problems that arise when they interact with a new hospital resource, such as a new information or communication technology that links the hospital and physicians. At the far end of the spectrum, liaisons are involved in physicians' or group practices' business development—for example, facilitating patient referrals and helping physicians build their practices by increasing potential patients' awareness of the physician's affiliation with the hospital. This "physician relations management" model, which industry consultants view as uncommon but growing, typically incorporates tracking a hospital's market share of admissions and referrals (Abrams and Morgan 2007).

At a 2006 conference on hospital–physician relationships, one hospital described how it stratifies the physician practices in its market area and deploys its 19-member sales team to target physicians whose volume of hospital-based outpatient services is below expected levels. Assuming the physician is in an area with projected need, the low volume could be due to a conservative practice style, a slow practice, or the physician's decision to refer some patients elsewhere. Team members are dispatched to "educate" targeted physicians and encourage them to increase service use or change referral patterns (Ghosn and Haas 2006).

Joint ventures

When confronted with the possibility of physicians investing in their own facilities, some hospitals have responded by establishing joint ventures with physicians. These arrangements include imaging centers, ASCs, cardiac catheterization labs, and even specialty hospitals. From the hospital's perspective, engaging in a joint venture allows it to reinforce physician loyalty and retain some of the revenue it otherwise might lose to a physician-owned entity. From the physicians' perspective, a joint venture allows them to take advantage of the hospital's capital, management ability, pool of patients, and potentially higher reimbursement rates (Berenson et al. 2006, Credit Suisse First Boston 2004). In some cases, a third party may partner with physicians and hospitals in developing a facility; the third party offers capital as well as development and management expertise. For example, United Surgical Partners International has developed many ASCs in conjunction with nonprofit hospital systems and physician groups. Generally, each party owns one-third of the ASC (Credit Suisse First Boston 2004).

Variations of joint ventures include agreements in which hospitals lease equipment to physician groups. For example, some hospitals establish imaging centers in a medical office building and lease the equipment and staff to physician practices in the building. These practices send their patients to the imaging center for studies such as MRI scans, bill the payer for the services, and pay the hospital a fee for use of the equipment and staff. The practices can profit from the difference between the reimbursement rate and the fee they pay the hospital. These arrangements, which can fit into an exception to the Stark law, may be more convenient for patients than traveling to the hospital and may help the hospital secure physician loyalty.

Another type of joint venture is an "under arrangements" model. In this model, a hospital contracts with a physician practice to furnish services such as diagnostic tests and outpatient surgery on behalf of the hospital's patients; the hospital bills Medicare and pays the practice a fee. Hospitals originally used this model to provide their patients with certain services that were not available at the hospital because they were needed infrequently and the hospital decided it was more cost effective to purchase them on an ad hoc, outpatient basis. According to CMS, "under arrangements" deals between referring physicians and hospitals have proliferated in recent years; anecdotal reports cite hospital and physician joint ventures that were created to provide imaging services to the hospital's

patients. Previously, the hospital provided these services directly (CMS 2007). The primary purpose of the arrangements described by CMS appears to be to allow physicians to profit from referring patients to the hospital, thereby providing a financial incentive for them to make such referrals, regardless of their clinical appropriateness. The arrangements may also allow physicians to share in Medicare's higher payment rates for services provided in hospital settings. For example, Medicare pays more for ambulatory surgical procedures under the hospital outpatient payment system than under the ASC payment system.

Joint ventures may have tax and physician self-referral legal implications (see text box, p. 62). If a joint venture involves a not-for-profit hospital and a for-profit physician group, the joint venture partnership must further the hospital's charitable purpose for the hospital to maintain its tax-exempt status. In these cases, the hospital must exercise sufficient control over the venture to ensure that it provides community benefits. Because of the legal risks involved in joint ventures and their belief that competing directly with physicians is not financially threatening, some hospitals have decided against participating in joint ventures (Berenson et al. 2006).

Participatory bonds: Paying physicians not to compete

Participatory bonds are another approach that hospitals may use to reward physicians for their loyalty. These instruments do not have the limitations inherent in rewarding physicians with investments in joint venture opportunities in ASCs or imaging centers—namely, that primary care physicians typically are excluded from specialty care joint venture opportunities and that joint venture income is taxable for physician owners.

Participatory bonds are tax-free bonds issued to physicians by nonprofit entities (e.g., a hospital, ASC, or imaging center). They often are sold to PCPs as well as specialists who admit to the hospital. Recently, physicians have been paid tax-exempt interest rates ranging from 9 percent to 12 percent, which is well above the market rate for other bonds issued by the same hospitals (typically about 5 percent). In exchange for the high rate of interest, physician investors must sign a noncompete agreement.

Hospitals tend to sell 60 percent of the bonds to nonphysician investors and 40 percent to referring physicians to qualify under the "60-40" safe harbor (42 CFR 1001.952). The 60-40 safe harbor provides protection against federal anti-kickback regulations, as long as 60 percent or more of an investment in an entity comes from individuals who do not have other dealings with the issuer of the bond (i.e., someone other than referring physicians or the hospital).

For a hospital to maintain its tax-exempt status, the IRS requires that the bonds have an interest rate in line with market rates. This requirement presents a potential quandary for hospitals, which need to assure the IRS that the interest rate on its bonds reflects market rates while convincing physician investors that the rate being offered is better than they could earn on alternative investments. To produce an effective interest rate of roughly 9 percent to 12 percent, these bonds often have features that in other situations typically necessitate the offer of a higher interest rate, such as being "callable" (meaning the hospital can pay them off at any time) and subordinate to other debt (meaning the participatory bonds are paid after the hospital's other debt holders if the hospital goes bankrupt). In addition, interest payments are deferred if the bond issuer (e.g., hospital) does not meet certain cash flow targets. Tying the timing of interest payments to hospital cash flows appears on the surface to be a way for doctors to "participate" in the hospital's cash flows, but even when the hospital does not meet cash flow targets in a given year, physicians will receive deferred interest payments when the bonds mature.

Although the call features and subordinate nature of the bonds allow hospitals to argue that the 9 percent to 12 percent rate paid is justified, investing physicians may consider it unlikely that the hospital will call the bonds (and upset the physicians) or go bankrupt. Given that their interest rate may be as much as twice that of other tax-free bonds issued by the hospital, participatory bonds are an attractive investment. In the limited number of cases of which we are aware, physician and nonphysician demand for the bonds has been strong. One question is whether the difference between the interest rate paid on participatory bonds (e.g., 10 percent) and the interest rate on other hospital debt (e.g., 5 percent) should be seen primarily as a tax-free payment to physicians for their noncompete agreements.

Conclusion

The common thread in most current hospital–physician collaboration strategies is that they enable, encourage, or reward volume growth. This is not a new or unusual

phenomenon—hospitals and physicians created distinct types of collaborative relationships in the 1990s (see text box) to respond to the predominant payment incentives in private health plans at that time. Some of the current types of collaborative relationships between hospitals and physicians have positive effects from the perspective of Medicare and its beneficiaries, such as collaborations that improve the quality of inpatient care in response to pay-for-performance incentives or provide access to specialty services in hospital EDs serving underserved communities. Nonetheless, most of the current collaborative relationships are rational responses to the FFS payment policy incentives presented by Medicare and many commercial health insurance payers, which reward providers with increased revenue as they increase the volume of services rather than rewarding increases in the quality or value of the care provided. Medicare's FFS payment system also rewards providers for improving their efficiency in delivering services, but under current law the Medicare program and its beneficiaries are, for the most part, not able to directly share in any savings generated by efficiency gains. To change these dynamics, it is incumbent upon Medicare to change the incentives inherent in current payment policy and clarify the legal framework governing hospital–physician collaborations to create incentives for providers to collaborate on improving the quality and value of care over time and across health care settings. ■

Recent experience illustrates the power of financial incentives to encourage hospital–physician collaboration

The observation that hospital–physician relationships will change in response to public and private payment policy incentives is not new. A key lesson from the 1990s is that providers' responses to financial incentives will result in structural changes in the health care delivery system.

Hospital–physician integration in the 1990s

In the 1990s, the rise of HMOs and the prospect of capitation eventually taking hold across the nation led doctors and hospitals to form physician–hospital organizations (PHOs) whose primary purpose was to allocate capitated payments. As an alternative to PHOs, hospitals were also purchasing physician practices in an effort to recruit physicians, ensure patient flows, and avoid having to negotiate every year with physicians in the PHO over how to divide patient revenues. Some integration strategies may have resulted in modest decreases in lengths of stay and lower inpatient Medicare costs (Mark et al. 1998, Stensland and Stinson 2002). But the dominant theme in the literature is that hospital–physician integration did not lead to major improvements in clinical integration in most markets (Bazzoli et al. 2004). According to Burns and Pauly (2002), "…the structures that were put in place to integrate different providers often failed to fundamentally alter the manner in which physicians practiced medicine and collaborated with other health care professionals. As a result, integrated structures rarely integrated the actual delivery of patient care."

Hospital–physician integration can be viewed as a continuum from almost no interaction between a patient's primary care physician and providers who care for the patient in the hospital to common ownership of the physician practice and hospital. Common ownership can take the form of one organization owning the hospital and employing physicians or physicians owning the hospital. Over the past 10 years, employment of physicians and physician ownership of hospitals have been on the rise, while looser forms of integration such as PHOs have been on the decline. We focus on the two most common types of financial integration: PHOs (loose financial integration) and the salary model (tight financial integration for employed physicians).

American Hospital Association data indicate that most hospitals have either a PHO, salary model, or some intermediate form of integration, but it is important to note that the integration often applies to only a subset of physicians (AHA 2008). Therefore, although many hospitals have some form of physician integration, numerous physicians in the community remain independent practitioners.

Physician–hospital organizations

Some PHOs were formed by hospitals and their medical staffs to provide joint contracting with managed care organizations (Morrisey et al. 1996). Roughly 75 percent of current PHOs are open to all members of the hospital medical staff, and roughly 25 percent of PHOs are "closed PHOs," meaning that membership is limited to physicians who meet certain criteria for quality or cost effectiveness (AHA 2007b). In addition to joint contracting, PHOs can also provide supporting activities such as utilization review and quality assurance, physician credentialing, and marketing; they may also jointly operate ancillary facilities (Snail and Robinson 1998). Because forming a PHO usually does not affect asset ownership, PHOs often lack permanence and may have minimal influence over physician practice styles. The lack of permanence is evident in the gradual decline in PHOs as indicated in Figure 3-1 (p. 74).

Figure 3-1 should be interpreted cautiously because there are many forms of PHOs. Some PHOs were formed in anticipation of capitation entering the market, and some of them were dissolved because capitation never materialized. Other PHOs were formed and signed contracts with insurers but dissolved after bitter arguments over how to divide payments. A large share of PHOs continue to contract with insurers. However, the Federal Trade Commission may be concerned that some of them may be primarily designed to negotiate higher prices (Casalino 2006). Lastly, few PHOs have had success in leading physicians and hospitals to work jointly toward improving clinical practices.

The question in the academic literature has been whether, on average, PHOs have lower costs or higher quality than in the average market with

(continued next page)

Recent experience illustrates the power of financial incentives to encourage hospital–physician collaboration (cont.)

independent physicians and hospitals. The findings are not encouraging. Two recent studies found that the average PHO either has no effect on quality or has at best a small positive effect on quality in the first few years after being formed (Cuellar and Gertler 2006, Madison 2004). The literature is mixed on the effect of PHOs on private sector pricing and costs of care; some studies find no effect, but others indicate PHOs may result in higher prices paid by private insurers and more Part B services purchased during the 90 days following Medicare admissions (Ciliberto and Dranove 2006, Cuellar and Gertler 2006, Federal Trade Commission and Department of Justice 2004, Madison 2004). PHOs that were formed to deal with private insurers may be based on an implicit agreement that physicians will help hospitals obtain patient volume and hospitals will use their market power to help physicians obtain higher payment rates. PHOs formed in reaction to Medicare policy might create a different dynamic between physicians and hospitals. Medicare is a price setter; therefore, PHOs would not be formed to gain market power over Medicare. With appropriate incentives, it is possible that a larger share of PHOs may focus instead on improving quality and efficiency for Medicare patients.

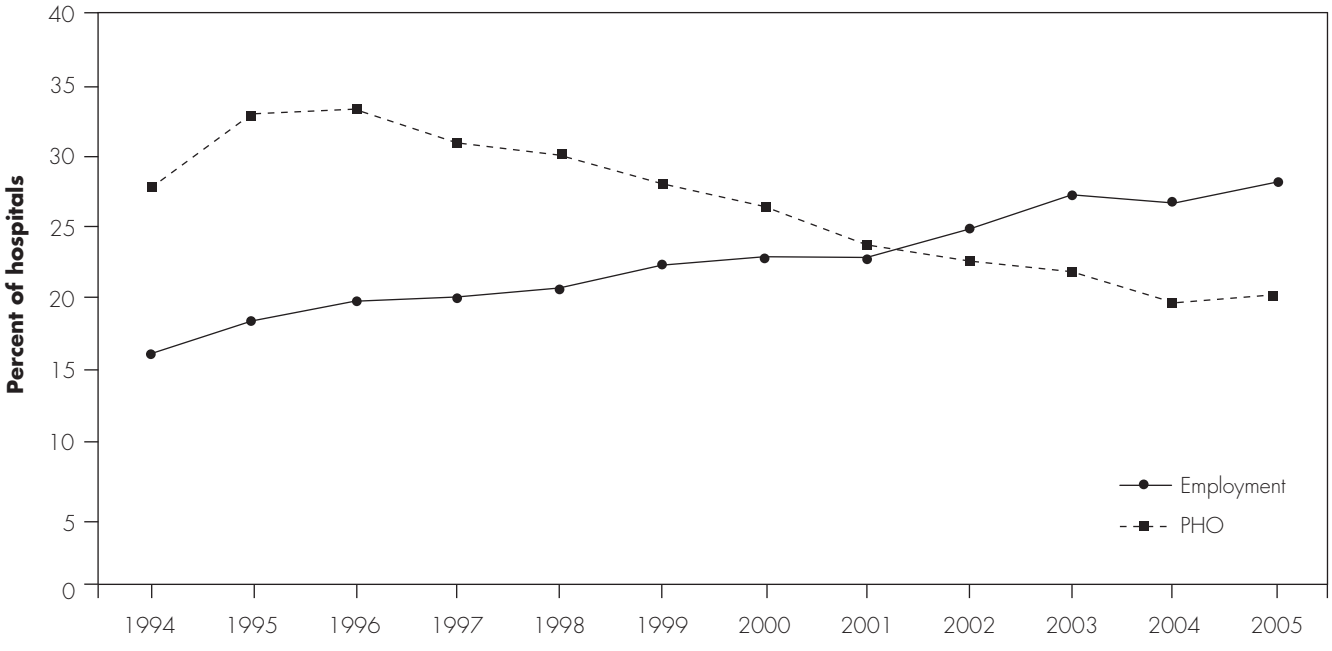
The salary model of hospital–physician integration

In the salary model, an integrated system or a hospital (often physician led) is formed to employ the affiliated physicians. The literature suggests that—on average—modest improvements in quality and efficiency appear to be more likely in the salary model and other strong models of integration than in loose PHOs (Cuellar

(continued next page)

FIGURE 3–1

Employment has surpassed PHOs as the most common model of hospital–physician integration



Note: PHO (physician–hospital organization).

Source: American Hospital Association. Hospital Statistics, various years.

Recent experience illustrates the power of financial incentives to encourage hospital–physician collaboration (cont.)

and Gertler 2006, Madison 2004, Mark et al. 1998, Stensland and Stinson 2002).

The salary model may be a more successful form of integration than PHOs because of its ability to unify management and influence physician behavior (Cave 1995). Hospitals employing physicians may be more assured of having physicians accept on-call coverage and not split their admissions with a rival hospital. From the physician's perspective, employment eliminates the risk of owning a private practice, reduces managerial headaches, and provides malpractice coverage from the hospital. Employment of physicians has continued to become more common through 2007 (AHA 2007b, Liebhaber and Grossman 2007).

As is the case with PHOs, there are a range of motivations for employing physicians. In some cases, a single entity has an integration strategy, owns hospitals, and employs most of the active medical staff. In other cases, physician employment is one of several strategies a hospital will use to recruit physicians to its active medical staff. In this case, recruitment—not clinical integration—may be the hospital's priority. A third motivation for employing physicians is a defensive acquisition; the goal is not integration but simply to prevent competitors from acquiring the admitting physicians' practices. For example, during the heat of the 1990s acquisition frenzy, Dr. Todd Sagan, head of practice acquisitions for Temple Hospital in Philadelphia, stated "most of the deals are being driven by a worry that if we don't do it, someone else will. The feeling is: 'I may suffer from doing acquisitions, but at least I'll stay in the game. If I don't do them, I may not survive'" (Anders 1997). Our site visits and the literature suggest that the losses on physician practices have diminished and the pressure to recruit specialty physicians, especially those who will take call, has increased. This situation may drive hospitals and integrated systems to continue to expand the salary model.

Why are hospitals and physicians increasingly choosing the salary model over a PHO?

From the hospital's perspective, PHOs are limited in their influence over physicians' on-call and referral decisions. Employing physicians overcomes these limitations. In addition, the PHO cannot be structured to take all contingencies into account in the initial PHO contract, providing the hospital little leverage to obtain physician cooperation when new issues arise. The literature also suggests that employed physicians tend to have slightly more loyalty to their hospital than those with looser forms of affiliation (Bazzoli et al. 2004). Employment also prevents hospitals from being at the mercy of referring physicians when negotiating the sharing of payments. Of course, not all hospitals will employ physicians. Some hospital executives may be reluctant to employ physicians because of the cost and a lack of tools to adequately manage and motivate physicians.

Physicians have personal preferences about whether they want to be entrepreneurs or employees. Some may enjoy entrepreneurial challenges and prefer to work in a small group. Others may prefer employment and the security it offers. In addition, physicians may see employment as a way to obtain lower cost malpractice coverage through their employer. Finally, some small physician groups may believe they can negotiate higher payments from plans if they are part of a larger organization (Casalino et al. 2004, Cuellar and Gertler 2006). The quest for higher private-payer payment rates and the rise of malpractice costs could be fueling the reduction in the share of physicians working in small group practices (Liebhaber and Grossman 2007).

Lessons learned from the 1990s

Although hospital–physician integration can be successful, there are some clear cautionary signs from the 1990s. In some cases, physicians and hospitals could not agree on how to share revenue, causing the collapse of the PHO. In other cases, the physician and hospital could agree on how to share revenue, but they did not clinically integrate—meaning they did not change the way they delivered care to the patient. Past experience suggests that financial integration and clinical integration are possible, but achieving these objectives will be a challenging and contentious process in many health care markets. ■

Endnotes

1 The percentage of workers with employer-sponsored health insurance enrolled in a traditional FFS indemnity insurance plan decreased from 27 percent in 1996 to 3 percent in 2007, but the share enrolled in a preferred provider organization plan, which is a form of FFS, increased from 28 percent to 57 percent in the same period. Enrollment in HMO plans, which tend to have the most capitated payment arrangements, decreased from 31 percent to 21 percent during this time (KFF/HRET 2007).

2 For example, as an administrator at the 100-bed Baptist Hospital Northeast said, "Our system has entered into these relationships [employing physicians] … largely as a defensive strategy because two of our major competitors in the Louisville-metro area have begun employing physicians. If your competitors are willing to employ physicians and they are soliciting the doctors in your network, overnight you could lose significant market share." (Johnson 2006).

3 Nevertheless, the OIG concluded that it lacked the statutory authority to require safeguards to ensure that cost-saving measures do not reduce quality.

References

Abelson, R. 2005. To fight rising costs, hospitals seek allies in the operating room. *New York Times*, November 18.

Abrams, M., and M. Morgan. 2007. Nurturing the hospital–physician relationship. *Hospitals and Health Networks Online*. July 9.

American College of Emergency Physicians. 2006. Three-fourths of emergency department directors report shortages of medical specialists. Press release. Dallas, TX: ACEP. May 2.

American Hospital Association. 2008. *Hospital statistics*. Washington, DC: Health Forum LLC, an AHA affiliate.

American Hospital Association. 2007a. Guidance for clinical integration. Working paper, Hogan & Hartson, LLP, for the American Hospital Association. April.

American Hospital Association. 2007b. *Hospital statistics*. Washington, DC: Health Forum LLC, an AHA affiliate.

American Hospital Association Center for Healthcare Governance. 2007. *Hospital–physician clinical integration*. Chicago, IL: AHA Center for Healthcare Governance.

Anders, G. 1997. Hospitals that gobbled up physicians' practices feel ill. *Wall Street Journal*, June 17.

Arizona Health Futures. 2005. *Can this marriage be saved? Physician–hospital relationships*. Phoenix, AZ: Arizona Health Futures. December.

Baicker, K., and A. Chandra. 2004. Medicare spending, the physician workforce, and beneficiaries' quality of care. *Health Affairs Web Exclusives* (April 7): w4–w184.

Bazzoli, G. J., L. Dynan, L. R. Burns, et al. 2004. Two decades of organizational change in health care: What have we learned? *Medical Care Research and Review* 61, no. 3: 247–331.

Berenson, R. A., P. B. Ginsburg, and J. H. May. 2006. Hospital–physician relations: Cooperation, competition, or separation? *Health Affairs Web Exclusives* (December 5): w31–w43.

Brewer, Benjamin. 2008. How family doctors can make a difference in hospital care. *Wall Street Journal*, January 2.

Burns, L. R., and M. V. Pauly. 2002. Integrated delivery networks: A detour on the road to integrated health care? *Health Affairs* 21, no. 4: 128–143.

Butcher, L. 2007. CMS quality demo pays dividends for hospitals, but not always financially. *ACP Hospitalist*. September.

Casalino, L. P. 2006. The Federal Trade Commission, clinical integration, and the organization of physician practice. *Journal of Health Politics, Policy and Law* 31, no. 3: 569–585.

Casalino, L. P., H. H. Pham, and G. Bazzoli. 2004. Growth of single-specialty medical groups. *Health Affairs* 23, no. 2: 82–90.

Casalino, L. P., and J. C. Robinson. 2003. Alternative models of hospital–physician affiliation as the United States moves away from tight managed care. *The Milbank Quarterly* 81, no. 2: 331–351.

Cave, D. 1995. Vertical integration models to prepare health systems for capitation. *Health Care Management Review* 20, no. 1: 26-39.

Centers for Medicare & Medicaid Services, Department of Health and Human Services. 2007. Medicare program: Proposed revisions to payment policies under the physician fee schedule, and other Part B payment policies for CY 2008 [CMS-1385-P]. *Federal Register* 72, no. 133 (July 12): 38122–38206.

Chandra, A., and D. Staiger. 2007. Productivity spillovers in health care: Evidence from the treatment of heart attacks. *Journal of Political Economy* 115, no. 1: 103–140.

Ciliberto, F., and D. Dranove. 2006. The effect of physician–hospital affiliations on hospital prices in California. *Journal of Health Economics* 25, no. 1: 29–38.

Congressional Budget Office. 2008. *Geographic variation in health care spending.* Washington, DC: CBO.

Credit Suisse First Boston. 2004. *United Surgical Partners*. July 19.

Cuellar, A., and P. Gertler. 2006. Strategic integration of hospitals and physicians. *Journal of Health Economics* 25, no. 1: 1–28.

ECG Management Consultants. 2005. *Insight: Reconsidering physician employment.* Seattle, WA: ECG.

Eisenberg, S. 2006. Proactive physician alignment and employment models. Presentation at Hospital and Physician Relations: An Executive Summit. October 22. Scottsdale, AZ.

Federal Trade Commission and Department of Justice. 2004. *Improving health care: A dose of competition*. Washington, DC: Federal Trade Commission and Department of Justice.

Fisher, E., D. Wennberg, T. Stukel, et al. 2003a. The implications of regional variations in Medicare spending. Part 1: The content, quality, and accessibility of care. *Annals of Internal Medicine* 138, no. 4: 273–287.

Fisher, E., D. Wennberg, T. Stukel, et al. 2003b. The implications of regional variations in Medicare spending. Part 2: Health outcomes and satisfaction with care. *Annals of Internal Medicine* 138, no. 4: 288–298.

Gawande, Atul. 2007. The checklist. *The New Yorker*, December 10.

Ghosn, C. J., and K. Haas. 2006. Targeting physician growth. Presentation at Hospital and Physician Relations: An Executive Summit. October 22. Scottsdale, AZ.

Goldsmith, J. 2006. Hospitals and physicians: Not a pretty picture. *Health Affairs Web Exclusives* (December 5): w72–w75.

Internal Revenue Service. 2007. Memorandum: Hospitals providing financial assistance to staff physicians involving electronic health records. Washington, DC: IRS. May 11.

Jauhar, Sandeep. 2008. Many doctors, many tests, no rhyme or reason. *New York Times*, March 11.

Johnson, Rick. 2006. Dr. Punch Clock? *HealthLeaders*. May.

Kaboli, P., M. J. Barnett, and G. E. Rosenthal. 2004. Associations with reduced length of stay and costs on an academic hospitalist service. *American Journal of Managed Care* 10, no. 8: 561–568.

Kaiser Family Foundation and Health Research and Educational Trust. 2007. *Employer health benefits: 2007 annual survey*. Menlo Park, CA: KFF/HRET.

Landrum, M. B., E. R. Meara, A. Chandra, et al. 2008. Is spending more always wasteful? The appropriateness of care and outcomes among colorectal cancer patients. *Health Affairs* 27, no. 1: 159–168.

Liebhaber, A., and J. M. Grossman. 2007. *Physicians moving to mid-sized single-specialty practices*. Tracking report. Washington, DC: Center for Studying Health System Change. August.

Lindenauer, P., M. Rothberg, P. Pekow, et al. 2007. Outcomes of care by hospitalists, general internists, and family physicians. *New England Journal of Medicine* 357, no. 25: 2589–2600.

Madison, K. 2004. Hospital–physician affiliations and patient treatments, expenditures, and outcomes. *Health Services Research* 39, no. 2: 257–278.

Mark, T. L., W. N. Evans, C. L. Schur, et al. 1998. Hospital–physician arrangement and hospital financial performance. *Medical Care* 36, no. 1: 67–78.

Medicare Payment Advisory Commission. 2007. *Report to the Congress: Assessing alternatives to the sustainable growth rate system*. Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2006. *Report to the Congress: Physician-owned specialty hospitals revisited*. Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2005a. *Report to the Congress: Medicare payment policy*. Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2005b. *Report to the Congress: Physician-owned specialty hospitals*. Washington, DC: MedPAC.

Medicare Payment Advisory Commission. 2003. *Report to the Congress: Variation and innovation in Medicare*. Washington, DC: MedPAC.

Merritt, Hawkins & Associates. 2007a. *2007 review of physician and CRNA recruiting incentives.* Irving, TX: MHA.

Merritt, Hawkins & Associates. 2007b. *2007 physician inpatient/outpatient revenue survey.* Irving, TX: MHA.

Mitchell, J. 2007. Utilization changes following market entry by physician-owned specialty hospitals. *Medical Care Research and Review* 64, no. 4: 395–415.

Morrisey, M. A., J. Alexander, L. R. Burns, et al. 1996. Managed care and physician/hospital integration. *Health Affairs* 15, no. 4: 62–73.

Nallamothu, B. K., M. A. Rogers, M. E. Chernew, et al. 2007. Opening of specialty cardiac hospitals and use of coronary revascularization in Medicare beneficiaries. *Journal of the American Medical Association* 297, no. 9: 962–968.

Nathanson, S. D., and R. J. Schmidt. 2006. Co-management: an alignment strategy. Presentation at Hospital and Physician Relations: An Executive Summit. October 22. Scottsdale, AZ.

Office of Inspector General, Department of Health and Human Services. 1999. *Special advisory bulletin: Gainsharing arrangements and CMPs for hospital payments to physicians to reduce or limit services to beneficiaries*. Washington, DC: OIG. July.

O'Malley, A. S., D. A. Draper, and L. E. Felland. 2007. *Hospital emergency on-call coverage: Is there a doctor in the house?* Issue brief no. 115. Washington, DC: HSC. November.

Pham, H. H., J. Coughlan, and A. S. O'Malley. 2006. The impact of quality-reporting programs on hospital operations. *Health Affairs* 25, no. 5: 1412–1422.

Pham, H. H., K. J. Devers, S. Kuo, et al. 2005. Health care market trends and the evolution of hospitalist use and roles. *Journal of General Internal Medicine* 20, no. 2: 101–107.

Phy, M. P., D. J. Vanness, L. J. Melton III, et al. 2005. Effects of hospitalist model on elderly patients with hip fracture. *Archives of Internal Medicine* 165: 796–801.

Pritchard R. S., E. S. Fisher, J. M. Teno, et al. 1998. Influence of patient preferences and local health system characteristics on the place of death. *Journal of the American Geriatrics Society* 46: 1242–1250.

Relman, A. S. 2007. *A second opinion: Rescuing America's health care*. New York: The Century Foundation.

Shortell, S. M., and S. J. Singer. 2008. Improving patient safety by taking systems seriously. *Journal of the American Medical Association* 299, no. 4: 445–447.

Snail, T., and J. Robinson. 1998. Organizational diversification in the American hospital. *Annual Review of Public Health* 19: 417–453.

Society of Hospital Medicine. 2008. *2008 media kit*. Philadelphia, PA: SHM.

Society of Hospital Medicine. 2007. *Hospitalists: Leading the way to more effective, higher quality healthcare*. Philadelphia, PA: SHM.

Southern, W. N., M. A. Berger, E. Y. Bellin, et al. 2007. Hospitalist care and length of stay in patients requiring complex discharge planning and close clinical monitoring. *Archives of Internal Medicine* 167, no. 17: 1869–1874.

Stensland, J., and T. Stinson. 2002. Successful physician–hospital integration in rural areas. *Medical Care* 40, no. 10: 908–917.

Wennberg, J. E., E. S. Fisher, L. Baker, et al. 2005. Evaluating the efficiency of California providers in caring for patients with chronic illnesses. *Health Affairs Web Exclusives* (November 16): w526–w543.

Wennberg, J. E., E. S. Fisher, T. A. Stukel, et al. 2004. Use of hospital, physician visits, and hospice care in the last six months of life among cohorts loyal to highly respected hospitals in the United States. *British Medical Journal* 328, no. 3: 1–5.

Wennberg, J. E., E. S. Fisher, and J. S. Skinner. 2002. Geography and the debate over Medicare reform. *Health Affairs Web Exclusives* (February 13): w96–w114.

Wennberg, J., and M. A. Cooper. 1999. *The Dartmouth atlas of health care*. Chicago, IL: American Hospital Publishing.